RISC Router 3400R
Installation Guide

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RISC Router 3400R Installation Guide, Version 1.1
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Chapter 1 - Introduction

About the RISC Router 3400R

Congratulations on your purchase of the RISC Router 3400R multiport wide area router. The RISC Router 3400R supports the IP, IPX, AppleTalk, and DECnet protocols, with dial-on-demand and leased-line operation using the PPP and/or the Frame Relay wide area protocols.

This manual will help you install the RISC Router 3400R to connect your local Ethernet to one or more wide area networks. These networks may be connected to other Compatible Systems routers, or to routers from other vendors. You can also use the RISC Router 3400R (or one of its WAN ports) to connect your network to an Internet Service Provider.

In short, the installation steps are:

1. **Install** the RISC Router hardware and connect it to one or more line communication devices (including modems, 56K CSU/DSU's, ISDN Terminal Adapters, or T1/E1 CSU/DSU's).
2. **Select** the management method you wish to use with the router. If you want to use the RouterView management software, you must install the software on a Windows PC or Macintosh computer which is connected to your network.
3. **Configure** the RISC Router LAN and WAN parameters using the management method you have chosen.

If you have any difficulties during the installation or use of the RISC Router that are not answered by this guide, please call Compatible Systems Corporation or your RISC Router 3400R reseller. Compatible Systems' phone number is listed on the front of this guide. We will be happy to help you.

The manual is divided into several sections that should provide you with all the information you will need to use the RISC Router 3400R on your network.

Getting Started

This part of the manual describes the contents of the RISC Router 3400R package and emphasizes the preparation and equipment you will need to install the router.

Hardware Installation

Here you will find step-by-step instructions on how to physically install the RISC Router 3400R and connect it to your local Ethernet and your wide area network(s). Instructions are included for thick, thin, and twisted-pair Ethernet environments as well as modems, 56K & T1/E1 CSU/DSUs, and ISDN terminal adapters.

RouterView Software Installation

If you plan to use RouterView, Compatible Systems' GUI (Graphical User Interface) management software which is included with your router, then read this section. Instructions are provided on how to install RouterView for Windows or Macintosh environments.

Command Line Preparation

If you have decided to use command line management, either out-of-band (through the AUX port), or in-band through Telnet, read this section.

Quickstart Configuration

The Quickstart section provides a list of parameters that must be entered into a router for proper operation.

Appendices and Index

Additional information that might be of interest to you such as technical specifications and a quick reference to specific information can be found at the end of this guide.

Chapter 2 - Getting Started

A Few Notes

Please Read The Manuals

The manuals included with your RISC Router 3400R contain some very important information about the RISC Router 3400R and local and wide area networking in general. Please read this manual thoroughly, and refer to the management reference guides as required. It's worth the few minutes it will take.

Also, please fill out the warranty registration card and return it to us today. This will help us keep you informed of updates to the RISC Router 3400R and future products available from Compatible Systems.

Warranty and Service

The RISC Router 3400R is covered by the Compatible Systems Integrated Support Package, which includes a three-year comprehensive warranty, a twenty-four hour advanced replacement program, unlimited phone support, and software upgrades for the life of the product.

Compatible Systems maintains copies of current software updates on the Internet, CompuServe, AppleLink, an ARA server, and a bulletin board. You may download product software from any of these sources at any time. For more information on downloading current product software, see the appendices for this manual.

Getting Help With the RISC Router 3400R

If you have a question about the RISC Router 3400R and can't find the answer in this manual, feel free to call our technical support department at (800) 356-0283. You may also send support questions via e-mail to *support@Compatible.COM*.

What You Will Need To Get Started

Before connecting the RISC Router 3400R, please check the list below to make sure that you have received all of the items that are supplied with the RISC Router 3400R package.

You should also make sure you have any additional items that are necessary to connect the router to your network.

Supplied with the RISC Router 3400R

Please check your shipping package for the following items:

- RISC Router 3400R unit
- Rack-mount kit
- Power cord
- Two DIN-8 to DB-25 data cables
- One DIN-8 to DB-25 auxiliary port cable
- Windows RouterView diskette
- Macintosh RouterView diskette
- Windows download software diskette
- Macintosh download software diskette
- RouterView reference guide
- Command line reference guide
- Warranty registration card

❖ **Note:** *Some routers may be shipped with three RS-232 "Y" cables. These cables can be used for both data and auxiliary port operation.*

Needed For Installation

Before connecting the RISC Router 3400R to your network, you need to make sure that you have the necessary equipment for connecting to the local Ethernet and the wide area transmission device(s) (modem, 56K CSU/DSU, ISDN terminal adapter, T1 CSU/DSU).

Ethernet Connection Requirements

The RISC Router 3400R's Ethernet port directly supports thick, thin and 10BaseT twisted-pair Ethernet. Switching among the three ports is automatic – simply plug the proper Ethernet connector into its port. Other Ethernet cabling types (such as fiber optic cabling or pre-10BaseT twisted-pair) can be supported using adapters which connect to a thick Ethernet port.

Thick Ethernet

To connect the router's Ethernet port to a standard (thick) Ethernet cable you will need a transceiver cable connection at the correct location on your Ethernet cable. The transceiver cable will attach directly to the DB-15 connector on the router.

Thin Ethernet

To connect the router's Ethernet port to a thin Ethernet cable you will need a T-connector installed at the correct location on your Ethernet cable. A T-connector is required for proper termination of the cable.

10Base-T Twisted-Pair Ethernet

To connect the router's Ethernet port to twisted-pair Ethernet cabling you will need an unshielded twisted-pair wire that is connected to a 10BaseT-compatible twisted-pair hub.

❖ **Note**: *Ethernet cables and cable connectors are not supplied with the RISC Router product. Please contact your reseller or your Compatible Systems representative for information on obtaining the correct Ethernet cabling supplies.*

❖ **Note**: *These hardware installation instructions assume that your Ethernet cabling is already in place. Thin coaxial Ethernet network cabling should be terminated at each end with 50 Ohm terminator plugs. A T-connector or transceiver must be available in the location where you will be installing the router.*

Telco Line Connection Requirements

The RISC Router 3400R is not a line communications device. In order to connect to a wide area transmission line, you must use a modem,

56K CSU/DSU, ISDN Terminal Adapter, or T1/E1 CSU/DSU. Which of these devices you use depends on the type of line you are connecting to, along with which port on the RISC Router you plan to use for the specific connection.

❖ **Note:** *Before attempting to connect the RISC Router 3400R to a leased telco line, use the loopback features of your CSU/DSU's to check the line. This can save you a considerable amount of time, since the more equipment you have on the line, the more difficult it becomes to determine where a problem is occurring.*

The RISC Router 3400R provides two primary synchronous V.35 ports, which are capable of running at rates up to T1/E1 (2 megabits per second). Two secondary RS-232 sync/async ports are also provided.

V.35 Port

The RISC Router 3400R does not include V.35 cables. These cables are available from your reseller, or a number of other suppliers. The RISC Router 3400R has female V.35 connectors, as do virtually all line communications devices. Thus, the V.35 cable required to connect to a line communications device will usually have male connectors at both ends.

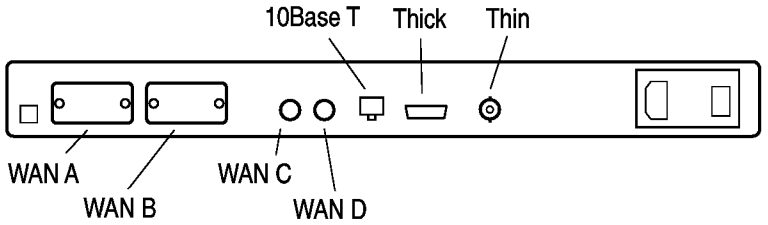
RS-232 Port

The RISC Router 3400R includes two DIN-8 to DB-25 RS-232 sync/async data cables. These cables support RS-232 asynchronous modems, synchronous leased and switched-56K CSU/DSU's, and North American ISDN Terminal Adapters.

Some Japanese and European terminal adapters may require an adapter plug. For more information, contact Compatible Systems.

❖ **Note:** *Please use **only** these cables when connecting your line communication device to the RISC Router 3400R. The cables provided with other equipment do not provide all of the connections required between connector pins for correct hardware handshaking and synchronous clocking.*

Chapter 3 - Hardware Installation



3400R Back Panel

This section of the manual describes how to connect the RISC Router 3400R to your Ethernet network and your wide area communications device(s). In summary, the steps for installation are:

1. **Make sure the router is powered down and not plugged in to the wall.**
2. **Wall or rack-mount the router, if required.**
3. **Connect the router to the Ethernet network(s).**
4. **Connect the router to the wide area line communications device(s).**
5. **Power up the line communications devices.**
6. **Plug in the power cable and power up the router.**

Mounting the Router

The RISC Router 3400R can be mounted in a variety of different ways, or can be left standalone on a desktop or equipment table.

❖ **Note**: *When stacking other equipment on the RISC Router 3400R, do not exceed 25 pounds of evenly distributed weight on top of the router. Additional weight may bend the case.*

A rack/wall mounting kit is included with the router.

19" Rack Front Mount

Install the rack-mount ears on the sides of the case towards the front, using the screws provided. Position the ears so that they are flush with the front of the case. The slotted holes in the ears will mate with the mounting holes in a standard 19" rack.

❖ **Note:** *The RISC Router 3400R is 1U high when its bottom-mounted rubber feet are removed. If you intend to mount the unit in a 1U space, make sure your equipment rack is well ventilated. Otherwise, thermal problems may occur.*

19" Rack Center Mount

Install the rack-mount ears using the mounting holes midway along the sides of the case, using the screws provided. The slotted holes in the ears will mate with the mounting holes in a standard 19" rack.

Wall Mount

Install the rack-mount ears on the middle of the case, using the screws provided. Position the ears so that they are flush with the bottom of the case. The slotted holes in the ears will mate with wood screws or other attachment methods.

❖ **Note:** *Wood screws are not provided with the rack-mount kit.*

Connecting the Router to the Ethernet

For thick and thin Ethernet networks you should have installed your Ethernet cabling before you install the RISC Router 3400R.

If you have a coax installation, the Ethernet network cable should be terminated at both ends with 50 Ohm network terminating resistors, and a T-connector or transceiver should be available at the location where you will connect the router.

If you are installing a twisted-pair connection, and the twisted-pair hub is already in place, or a T-connector or thicknet transceiver is already installed on your Ethernet cable, you can connect the router to an active network without interrupting network activity.

The RISC Router 3400R's Ethernet interface features all three media connector types. The active media connection will automatically be selected when you attach a cable.

Do not terminate inactive connectors on the router, as this may cause an incorrect media type to be selected.

Connecting to Thick Ethernet

To connect the router to a thick Ethernet network, simply plug one end of a transceiver cable into the DB-15 transceiver connector located on the back panel of the unit. Then, plug the other end of the transceiver cable into the transceiver which should already be attached to the thick Ethernet cable.

Connecting to Thin Ethernet

In order to connect the router to a thin Ethernet cable, connect a T-connector to the BNC connector located on the rear panel of the unit.

Connecting to Twisted-Pair Ethernet

Before connecting the router to twisted-pair cabling you need an unshielded twisted-pair cable that is already connected to your 10BaseT-compatible twisted-pair hub.

To connect the router to the twisted-pair network, simply plug the twisted-pair cable into the RJ-45 connector on the back of the unit.

Connecting a Line Device to the RISC Router 3400R

The RISC Router 3400R supports high-speed synchronous operation over two V.35 connectors. It also supports lower speed synchronous/asynchronous operation over two RS-232 connectors.

The RISC Router 3400R supports both PPP and Frame Relay link protocols on all WAN ports.

Connecting Devices to the V.35 Ports

These ports -- WAN A(0) and WAN B(1) -- can be used to connect to a wide variety of line communications devices, including those which support either leased or dialed operation.

Examples include leased 56K CSU/DSU's, switched 56K CSU/DSU's, fractional T1 CSU/DSU's, ISDN terminal adapters, and full T1/E1 rate CSU/DSU's.

You may select either dial-on demand, redial if down ("always up" mode), or leased line operation. These ports may also be set to receive ISDN or switched-56 incoming calls.

To connect a device, first make sure that both units are powered off. Then, simply connect a V.35 cable (not supplied) between the router and the device.

Connecting Devices to the RS-232C Ports

These ports -- WAN C(2) and WAN D(3) -- can be used to connect to synchronous or asynchronous line communications devices at rates up to 128Kbps (115.2 Kbps async).

Examples include modems, leased or switched 56K CSU/DSU's, and ISDN terminal adapters.

You may select either dial-on demand, redial if down ("always up" mode), or leased line operation. These ports may also be set to receive ISDN or switched-56 incoming calls.

To connect a device, first make sure that both units are powered off. Then, simply connect one of the supplied RS-232 data cables (not an auxiliary port cable) between the router and the device.

❖ **Note:** *The RISC Router 3400R RS-232 ports require that your line communications device be set to supply the RS-232 DCD signal when a connection has been made..*

❖ **Note:** *The RISC Router 3400R includes two special data cables to facilitate connections to RS-232 line communications devices. These cables include support for several asynchronous and synchronous control signals. Off-the-shelf Sun or Macintosh-type cables* ***do not*** *support these signals.*

Connecting an Out-of-Band Management Console

If you wish to connect an out-of-band management console, use the supplied auxiliary cable and connect to the AUX port on the front of the RISC Router 3400R. You can use a dumb terminal or a computer equipped with VT100 terminal emulation.

The default baud rate for the AUX port is 9600.

Powering Up the Router

Power up all modems, CSU/DSU's, and TA's before powering up the router. This allows the router to immediately sense which of its ports are connected. At power-up, the router will take approximately one minute to become visible to RouterView.

❖ **Note:** *If you want to use Telnet as a management method, you must configure an IP address into the router using an out-of-band console or RouterView before you will be able to contact the router.*

Chapter 4 - RouterView Software Installation

All of the routers in Compatible Systems' multiprotocol family, including all MicroRouter and RISC Router models, can be managed from a single management platform called RouterView. Both a Windows and a Macintosh version of RouterView were included with your RISC Router 3400R.

❖ **Note:** *Although the installation procedures for the Windows and Macintosh versions of RouterView are slightly different, the programs themselves are virtually identical. Once you have installed RouterView on the platform of your choice, you can find more information on how to use it in the RouterView Reference Guide which was included with your router.*

RouterView for Windows

RouterView for Windows allows you to manage the RISC Router 3400R from an IBM-compatible PC running Windows. The PC can either be configured as an IPX ODI client on a Novell NetWare internet, or as an IP WinSock client on an IP internet.

System Requirements

In order to successfully run RouterView for Windows, you need:

- IBM PC or compatible w/ 386 or later processor
- Windows 3.1 or Windows for Workgroups installed
- VGA or better monitor

And either (or both) of:

- Novell IPX client configuration on a NetWare network, using IPXODI.COM
- WinSock client configuration on an IP network

❖ **Note:** *The "IPX 101" appendix to the RouterView Reference Guide contains some tips on getting Novell's IPX ODI running on your client machine.*

❖ **Note:** *To force a Windows machine which has both IPX and IP installed to use IP, you must insert the statement LoadIPX = 0 in the [Settings] section of your C:\WINDOWS\ROUTVIEW.INI file.*

Installing and Running RouterView for Windows

This version of the RouterView program can be found on a 3.5-inch diskette labeled "RouterView - Windows Disk" that was included with your RISC Router 3400R.

Start Windows. Insert the diskette into your computer's disk drive. At the Windows Program Manager, select "Run" from the File menu and type A:SETUP (where A: is the drive containing the RouterView diskette). This will invoke an auto-installation program supplied with RouterView.

The installation program will ask you to select (or create) a directory in which it should locate RouterView and its associated files and database subdirectory.

Once the installation is complete, double click on the RouterView icon to open the program. For further information on using RouterView, see the RouterView Reference Guide included with your router.

❖ **Note:** *RouterView will be able to use the transport protocol (IP or IPX) you have selected to access Compatible Systems routers anywhere on your internetwork. This means you can use the IP transport option to manage routers across the global Internet network if you are connected to it.*

❖ **Note:** *For an up-to-date description of the changes (if any) made to Windows system files by the installation program, see the* README.TXT *file located in the RouterView installation directory.*

RouterView for Macintosh

RouterView for Macintosh allows you to manage the RISC Router 3400R from an Apple Macintosh or compatible computer. RouterView for Macintosh uses the AppleTalk protocol to communicate with the router.

System Requirements

A Macintosh version of RouterView was included with your router. You can run RouterView from any Macintosh on your network that meets the following technical specifications:

- Macintosh with 68030 or later processor (including PowerPC)
- System 7.0 or later.

❖ **Note**: *Although older Macintoshes such as SE/30's and IIsi's will run RouterView adequately for infrequent use, a newer/faster machine is preferable for larger networks where RouterView will be used more often.*

Installing and Running RouterView for Macintosh

To install RouterView for Macintosh, simply insert the RouterView diskette into the floppy drive of your Macintosh. Then double click on the self extracting archive (.sea) icon. You will be asked where you would like to locate your copy of the RouterView program and data files.

Double-click on the RouterView icon and the program will start up and ask you to select/create a location for its database. Once the database has been created, this message will not reappear when you run RouterView.

For further information on using RouterView, see the RouterView Reference Guide included with your router.

Chapter 5 - Setting Up Command Line Management

The command-line interface allows you to configure and monitor the router in-band via Telnet or out-of-band with a terminal connected to the RISC Router 3400R's AUX port.

Telnet is a remote terminal communications protocol based on TCP/IP. With Telnet you can log into and manage the router from anywhere on your IP internetwork, even across the global Internet if you choose. To do this, you must run Telnet client software on your local computer, which will communicate with the Telnet server built into the router.

In order to be able to access the command-line interface via Telnet, you must first set some IP parameters in the router. You can do this through the AUX port using a terminal or a PC with terminal emulation software, or with RouterView if you prefer.

After the IP parameters are set, you can complete the configuration in-band with Telnet.

Out-of-Band Command-Line Management

Set a terminal or a PC to a baud rate of 9600, and connect it to the router's AUX port using the auxiliary cable which was supplied with the router. Press the <Return> key three or four times.

Enter the default password ***letmein*** at the password prompt. The command line interface prompt will appear on the screen.

For further information on using the command line interface, see the Command Line Reference Guide that was supplied with your router.

Setting Up Telnet Operation

Before being able to access the command line interface via Telnet, you will need to complete basic IP configuration for the port which you will connect through.

This can be done using the **set ip** commands from a console. For more information on these commands, see the Command Line Reference Guide which was supplied with your router.

The required parameters for Telnet operation are the IP address, IP subnet mask, and IP broadcast address. To change the configuration parameters in the RISC Router 3400R, you will have to enter a requested password. The default password is ***letmein***.

After you have set these basic IP parameters, you can use Telnet to access the router from any node on your IP internetwork. Invoke the Telnet client on your local computer with the IP address of the router you wish to manage.

❖ **Note**: *Proper syntax is vital to effective operation of the command line. Case is not significant – you may enter commands in upper case, lower case, or a combination of the two.*

Chapter 6 - Quickstart Instructions

This Quickstart section briefly discusses the major parameters that must be set in order to use the router.

There are a number of parameter settings which are optional, in the sense that they are not required for all installations. These settings are not covered in this section.

In this section:

RV = RouterView

CL = Command Line

❖ **Note:** *Considerably more information on the meaning of the router's parameters is provided in the RouterView Reference Guide and the Command Line Reference Guide. You should use this list as a starting point to look up more specific information in the other documents. If you need more general information on the protocols, see the Appendices in the RouterView Reference Guide.*

❖ **Note:** *If you are using the RISC Router 3400R to connect to an Internet Service Provider (ISP), you will receive your configuration parameters from the technical staff of the ISP. These parameters must include all IP addresses, WAN settings, and any applicable authorization routines. If you obtained your RISC Router 3400R directly from an ISP, it may be pre-configured for your site.*

Please check with your ISP ***before*** *configuring or changing the configuration of your RISC Router 3400R.*

Ethernet Port Configuration

Ethernet ports are considerably easier to set up than wide area ports since there are no choices that need to be made regarding line communications devices and their parameters. We recommend that you begin by configuring any Ethernet port parameters before proceeding to configure WAN port parameters.

IP Protocol

Required for IP

These parameters set the basic address characteristics of the port. They provide enough information for another IP node to find the port (such as a Telnet client), but not enough information for routing to take place.

- IP Address
- IP Subnet Mask
- IP Broadcast Address

RV: Use the Ethernet/IP screen to set these parameters.

CL: Use the **interface**(misc) and **ip**(set) commands.

Suggested for IP

These parameters help supply information about the segment that the port is connected to. With this information, routing can take place.

- IP RIP (Routing Information Protocol)

and/or

- IP Static Routes

RV: Use the Ethernet/IP screen to set RIP, and the IP Static Routing Window (All/IP) to set static routes.

CL: Use **interface**(misc) and **ip flags**(set) to set RIP, and **ip route**(add) to add static routes.

IPX Protocol

Required for IPX

There are generally no required changes from the shipping Ethernet configuration for IPX. The Ethernet port will autoconfigure to use the two most common IPX frame types, and will autoadapt to conditions on the Ethernet.

Suggested for IPX

You may want to set your own network numbers, rather than using the autoconfigured values. You may also want to turn off unused frame types.

RV: Use the Ethernet/IPX screen.

CL: Use **interface**(misc) and **ipx**(set).

AppleTalk Protocol

Required for AppleTalk

There are generally no required changes from the shipping Ethernet configuration for AppleTalk. The Ethernet port will autoconfigure to use AppleTalk Phase II, and will autoadapt to conditions on the Ethernet.

Suggested for AppleTalk

You may want to set your own network numbers, rather than using the autoconfigured values. You may also want to use more meaningful zone names.

RV: Use the Ethernet/AppleTalk screen.

CL: Use **interface**(misc) and **appletalk**(set).

DECnet Protocol

Required for DECnet

The router's shipping configuration does not have DECnet turned on. You must turn it on and set several DECnet parameters.

- Turn DECnet on
- Set DECnet area
- Set DECnet node

RV: Use the Main DECnet screen (All/DECnet).

CL: Use **decnet**(set).

Suggested for DECnet

Setting the parameters above should be adequate for most installations.

WAN Port PPP Configuration

This section covers the settings required for PPP (point-to-point) protocol operation of the RISC Router 3400R WAN ports. In general, the parameters listed here should be set for each WAN port on which you plan to use PPP.

There are a few differences between the capabilities of the V.35 WAN ports and the RS-232 WAN ports. The V.35 ports can only be run synchronously, at rates up to 2 Mbps per second. The RS-232 ports can be run synchronously or asynchronously, at rates up to 128Kbps (sync), or 115.2Kbps (async).

IP Protocol

Required for IP

WAN ports which are set for PPP operation do not generally use an IP address. They are set to act as an "unnumbered interface." In this mode of operation, there are no required settings.

Suggested for IP

These parameters help supply information about the segment that the port is connected to. With this information, routing can take place.

- IP RIP (Routing Information Protocol)

and/or

- IP Static Routes
- IP Default Router

❖ **Note**: *If you set RIP to on for a dial-on-demand link, you must also set the update method to* ***triggered*** *to avoid the link being brought up by transmission of RIP information.*

RV: Use the WAN/IP screen to set RIP and the update method, and the IP Static Routing Window (All/IP) to set static routes and a default router.

CL: Use **interface**(misc) and then **ip flags**(set) to set RIP, and **ip wan**(set) to set the updated method, and **ip route**(add) to add static routes. User **interface**(misc) and **ip**(set) to set the default router.

IPX Protocol

Required for IPX

WAN ports which are set for PPP operation do not generally use an IPX address. They are set to act as an "unnumbered interface." In this mode of operation, there are no required settings.

Suggested for IPX

If you plan to use dial-on-demand for this link, you should set the update method (to triggered) to avoid the link being brought up by transmission of IPX RIP information.

- Update Method

RV: Use the WAN/IPX screen.

CL: Use **interface**(misc) and then **ipx wan**(set).

AppleTalk Protocol

Required for AppleTalk

WAN ports which are set for PPP operation do not generally use an AppleTalk address. They are set to act as an "unnumbered interface." In this mode of operation, there are no required settings.

Suggested for AppleTalk

If you plan to use dial-on-demand for this link, you should set the update method (to triggered) to avoid the link being brought up by transmission of AppleTalk RTMP information.

- Update Method

RV: Use the WAN/AppleTalk screen.

CL: Use **interface**(misc) and then **appletalk wan**(set).

DECnet Protocol

Required for DECnet

WAN ports which are set for PPP dial-on-demand operation should have their DECnet hello timers and DECnet routing timers set for a fairly long period, since the link will be brought up when this information is transmitted.

- Hello timer
- Routing timer

RV: Use the WAN/DECnet screen.

CL: Use **interface**(misc) and then **decnet wan**(set).

Link Configuration

Required for Dedicated/Leased Line Operation

Dedicated line operation is the simplest to set up.

- Set Dedicated connection
- Set PPP connection

RV: Use the WAN/Link screen.

CL: Use **interface**(misc) and then **wan connect**(set).

Suggested for Dedicated/Leased Line Operation

Dedicated line operation generally does not require additional parameters for operation.

Required for Dial-On-Demand Operation

Incoming dial-on-demand operation requires only slightly more information than dedicated line setup. Outgoing dial-on--demand requires additional information (see the suggested settings below).

- Set dial-up connection
- Set PPP connection
- Set to allow dial-in and/or dial-out

RV: Use the WAN/Link screen.

CL: Use **interface**(misc) and then **wan connect**(set).

Suggested for Dial-On-Demand Operation

Outgoing dial-on--demand requires some additional information.

- Set dialing method
- Create dial-out script
- Set dial-out script to be used

RV: Use the WAN/Link window to set the dialing method and to select a chat script (once you have created one). Use the Chat Script Editor window (All/Link) to create your chat script.

CL: Use **interface**(misc) and then **wan connect**(set) to set the dialing method and to select a chat script (once you have created one). Use the **chat**(edit) command to create a chat script.

Physical Comm Settings

You may need to set the baud rate, sync/async operation, and other physical communications parameters for the WAN port. These parameters will depend on the line communications device you are using.

RV: Use the WAN/General window.

CL: Use **interface**(misc) and then **wan serial**(set).

WAN Port Frame Relay Configuration

This section covers the settings required for Frame Relay operation of the RISC Router 3400R WAN ports. In general, the parameters listed here should be set for each WAN port on which you plan to use Frame Relay.

There are a few differences between the capabilities of the V.35 WAN ports and the RS-232 WAN ports. The V.35 ports can only be run synchronously, at rates up to 2 Mbps per second. The RS-232 ports can be run synchronously or asynchronously, at rates up to 128Kbps (sync), or 115.2Kbps (async).

IP Protocol

Required for IP

Frame Relay operation requires that the WAN port is set to be a "numbered interface." This means that the port (and thus the Frame Relay network) must have an IP address, etc.

- IP numbered interface
- IP Address
- IP Subnet mask
- IP Broadcast Address

RV: Use the WAN/IP screen to set these parameters.

CL: Use the **interface**(misc) and **ip wan**(set) commands.

Suggested for IP

These parameters help supply information about the segment that the port is connected to. With this information, routing can take place.

- IP RIP (Routing Information Protocol)

and/or

- IP Static Routes
- IP Default Router

RV: Use the WAN/IP screen to set RIP, and the IP Static Routing Window (All/IP) to set static routes and a default router.

CL: Use **interface**(misc) and then **ip flags**(set) to set RIP, and **ip route**(add) to add static routes. User **interface**(misc) and **ip**(set) to set the default router.

IPX Protocol

Required for IPX

Frame Relay operation requires that the WAN port is set to be a "numbered interface." This means that the port (and thus the Frame Relay network) must have an IPX network number.

- IPX numbered interface

- IPX Network Number

RV: Use the WAN/IPX screen.

CL: Use **interface**(misc) and then **ipx wan**(set).

Suggested for IPX

The settings above are all that is generally required for IPX operation over Frame Relay.

AppleTalk Protocol

Required for AppleTalk

Frame Relay operation requires that the WAN port is set to be a "numbered interface." This means that the port (and thus the Frame Relay network) must have an AppleTalk network number and the port must have an AppleTalk node number.

- AppleTalk numbered interface
- AppleTalk Network Number
- AppleTalk Node Number

RV: Use the WAN/AppleTalk screen.

CL: Use **interface**(misc) and then **appletalk wan**(set).

Suggested for AppleTalk

The settings above are all that is generally required for AppleTalk operation over Frame Relay.

DECnet Protocol

Required for DECnet

Once DECnet has been turned on (a global setting discussed in the Ethernet section above), no additional settings are generally required for DECnet operation over Frame Relay.

Link Configuration

Frame Relay is presently supported in the RISC Router 3400R only via dedicated line operation.

- Set Dedicated connection
- Set Frame Relay connection

RV: Use the WAN/Link screen.

CL: Use **interface**(misc) and then **wan connect**(set).

Suggested for Dedicated/Leased Line Operation

Dedicated line operation generally does not require additional parameters for operation.

Frame Relay DLCI Mappings

If you are connecting to another Compatible Systems router, this information is not required. Compatible Systems uses IARP (Inverse Address Resolution Protocol) to dynamically generate this information. To connect to other vendors' routers which do not support IARP, or do not have it turned on, you must provide DLCI to protocol mapping information.

RV: Use the DLCI Mapping Database window.

CL: Use **interface**(misc) and then **frelay**(set).

Physical Comm Settings

You may need to set the baud rate, sync/async operation, and other physical communications parameters for the WAN port. These parameters will depend on the line communications device you are using.

RV: Use the WAN/General window.

CL: Use **interface**(misc) and then **wan serial**(set).

Appendix A - Shipping Defaults

Ethernet Port

IP Defaults

- On
- Address: 198.41.12.1
- Subnet Mask: 255.255.255.0
- Broadcast Address: 198.41.12.255
- IP RIP off

IPX Defaults

- 802.3 on, autoseeding
- 802.2 on, autoseeding
- Type II off
- 802.2 SNAP off

AppleTalk Defaults

- Phase I off
- Phase II on, autoseeding

DECnet Defaults

- Off

WAN Port

IP Defaults

- On
- Unnumbered interface
- RIP off
- Van Jacobson compression off

IPX Defaults

- On
- Unnumbered interface

AppleTalk Defaults

- On
- Unnumbered interface

DECnet Defaults

- Off

V.35 (WAN A & WAN B) Link & Physical Defaults

- PPP
- Dedicated
- Sync, external clock

RS-232 (WAN C & WAN D) Link & Physical Defaults

- PPP
- Dial-in
- Async @ 115.2Kbps
- Hardware flow control

Appendix B - Connector and Cable Pin Outs

Pin Outs for V.35 Female Connector (DTE)

V.35 (DTE)	Signal	
A	Chassis Ground	<->
B	Signal Ground	<->
C	Request to Send	->
D	Clear to Send	<-
E	Data Set Ready	<-
F	Receive Line Signal Detect	<-
H	Data Terminal Ready	->
J	Local Loopback	->
P	Tx Data	->
R	Rx Data	<-
S	Tx Data	->
T	Rx Data	<-
U	Tx Clock Out	->
V	Rx Clock In	<-
W	Tx Clock Out	->
X	Rx Clock In	<-
Y	Tx Clock In	<-
AA	Tx Clock In	<-

Pin Outs for DIN-8 to RS-232 Data Cable (DCE/Male)

DIN-8 (DTE)	RS-232		DB-25 Data (DCE/Male)	RS-232
1	RTS	->	4 & 20	RTS & DTR
2	CTS	<-	5	CTS
3	Tx Data	->	2	Tx Data
4	Ground	<->	7	Ground
5	Rx Data	<-	3	Rx Data
6	Tx Clock	<->	15	Tx Clock
7	DCD	<-	8	DCD
8	Rx Clock	<-	17	Rx Clock
Shield		<->	Shield	

Notes:

1. DCD must be supported in order for the router to sense a completed connection.
2. Tx Clock direction is determined by an internal jumper. The line device sourcing clock (i.e. <-) is the default.

Pin Outs for DIN-8 to RS-232 Console Cable (DTE/Female)

DIN-8 (DTE)	RS-232		DB-25 Data (DTE/Female)	RS-232
1	RTS	->	5	CTS
2	CTS	<-	4	RTS
3	Tx Data	->	3	Rx Data
4	Ground	<->	7	Ground
5	Rx Data	<-	2	Tx Data
6	Tx Clock	<->	17	Tx Clock
7	DCD	<-	8	DCD
8	Rx Clock	<-	15	Rx Clock
Shield		<->	Shield	

Notes:

1. This cable is a null-modem DTE-to-DTE cable.
2. Because it is a null-modem cable, it can be connected "back-to-back" with a DCE/Male data cable in order to create a router-to-router test connection cable.

Appendix C - Light Patterns and Test Switch Settings

RISC Router 3400R Light Patterns

The RISC Router 3400R uses a number of light patterns on its front LED bars to indicate operating conditions.

Power On, No Traffic

The router will scan through the left (Ethernet) LED bar, from left to right, illuminating one element at a time.

❖ **Note**: *Lights 1 and 10 are directly connected to the router's 10BaseT interface and indicate 10BaseT link (1) and 10BaseT polarity (10).*

Ethernet **Traffic Indicators (Ethernet LED Bar)**

Scan from 2 to 5: Ethernet receive packet

Scan from 9 to 6: Ethernet transmit packet

Other Indicators (on Both LED Bars)

5 & 6 flashing: Router stacks starting up

3,4 & 7,8 flashing: Running from ROM

3,5 & 7,9 on solid: Erasing Flash ROM

2 to 4 & 9 to 6 rotating: Flash ROM erase due to switch setting five is complete. Set switch to zero and cycle power.

Level 1 Panic Indicators

Any continuous flashing pattern not noted above may be caused by a software "panic." This is a sign that a condition has been detected that the software does not know how to deal with: either an unusual network condition, or a hardware failure.

❖ **Note**: *Level 1 panics are very unusual. These are not the same as the Level 2 panics which may be noted in the router log. Level 2 panics simply cause the router to save the reason for the panic and restart.*

RISC Router 3400R Switch Settings

0	**Normal Operation**
1	Unused*
2	Unused*
3	**Run Boot ROM Downloader**
4	Unused*
5	**Erase Flash ROM (OS and Configuration)**
6	**Erase Flash ROM (Configuration Only)**
7	Unused*
8	Unused*
9	**Allow *letmein* password for 5 minutes after powerup**

Notes:

1. Settings marked with an asterisk may erase your Flash ROM. Please don't use these settings without first contacting Compatible Systems Tech Support.

Appendix D - Downloading Software From Compatible Systems

We make the latest versions of operating software for all Compatible Systems products available from a number of on-line sources. The latest versions of RouterView management software is also available at these locations.

To download software, select the proper source and follow the instructions below.

The Compatible Systems FTP Server

The FTP Server is accessible via the Internet. If your company does not have an Internet account, check the other sources.

1. FTP to ftp.Compatible.COM and login as "anonymous." Change the working directory to Compatible (cd Compatible). List the available directories (ls). Change the working directory to the appropriate directory (e.g.RISCRouter).
2. To transfer the files from the FTP, type "get" followed by the filename.
3. Disconnect from the FTP server.

❖ **Note:** *Uncompressed downloads (suitable for TFTP and RouterView Windows downloading) are stored as .dld files. Self-extracting Windows compatible style files (and RouterView for Windows itself) are stored as .exe files. Self extracting Macintosh style files are stored as .sea.bin and/or .sea.hqx files.*

❖ **Note:** *These files are also accessible via the World Wide Web at* ***http://www.compatible.com***

CompuServe

Compatible Systems maintains a software library in the LAN Vendors Forum of the CompuServe on-line service. To access the software library, follow these steps:

1. Type the GO COMPATIBLE command. This will place you in the LAN Vendors Forum.
2. Compatible Systems may be found in section 12 of this forum. Follow the instructions provided by CompuServe regarding downloading files.

Bulletin Board

Compatible Systems administers a bulletin board that you can access using standard telecommunications software. The bulletin board supports modem settings of 8-N-1 and speeds up to 9600 KBps. The BBS phone number is (303) 443-0845.

1. Type 'bbs' at the first login prompt.
2. Type "guest" at both the user and password query of the BBS login prompt. At any time after you login, you may type 'h' and receive a list of valid commands.
3. Once logged in, change to the files section of the BBS by using the 'F' command. Set the transfer protocol you wish to use (Zmodem is default) using the 'P' command.
4. Select the appropriate sub-board according to product and download the file(s) that you need via the 'd' command.

AppleTalk Remote Access Server

You can reach our AppleTalk Remote Access (ARA) server at (303) 444-8769. You must have Apple's ARA software to access this server.

1. Log in to the server as a guest.
2. Choose the server named 'Compatible ARA Server' which is located in the "DemoNet Zone" zone.
3. Open the appropriate folder and simply drag the file onto your hard disk.

Appendix E - Terms and Conditions

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